

Systems and Science Studies for Millimeter- and Submillimeter-wave Earth Venture Missions

Completed Technology Project (2012 - 2013)



Project Introduction

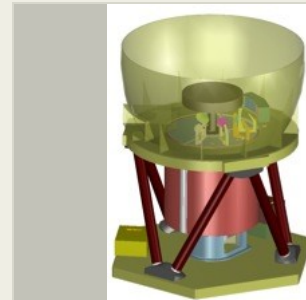
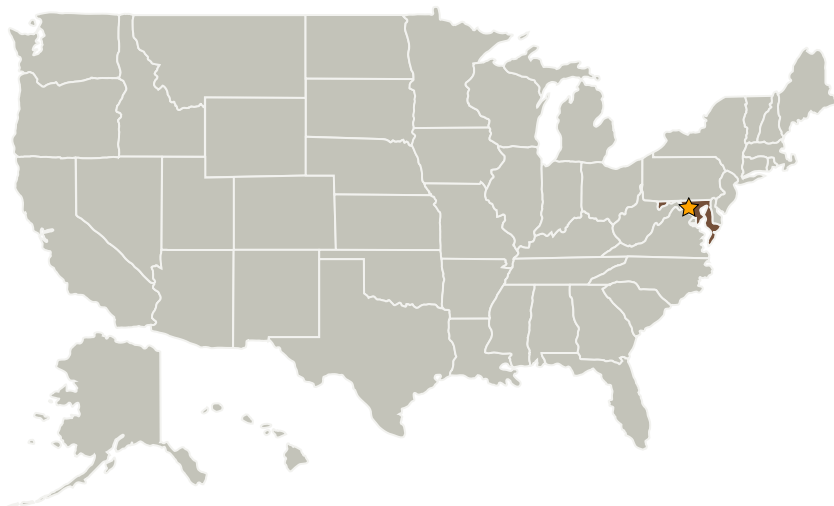
Investments in systems and science studies are required to advance in millimeter- and submillimeter-wave passive remote sensing. Over the next year, we will adapt the existing Cloud Ice Scanning Submillimeter Imaging Radiometer (CISSIR) instrument concept.

The plan to develop a cost-compliant EV-i instrument concept entails developing a science and instrument-performance trade space that considers channel selection, spatial resolution and swath, as well as auxiliary information obtained by potential co-manifested instruments. The trade-space is fairly complex, but by defining a small set of instrument/mission configurations, a cost matrix will indicate a point design of a CISSIR-like instrument that meets the EV-i cost constraint. Requirements for power dissipation cause the addition of mass and other complexities for the present design. We believe that we can successfully reduce the power consumption with compounded benefit in mass and cost.

Anticipated Benefits

Will benefit formulation of NASA's ACE mission, and possibly benefit NASA's GPM GV Program.

Primary U.S. Work Locations and Key Partners



SIRICE instrument concept

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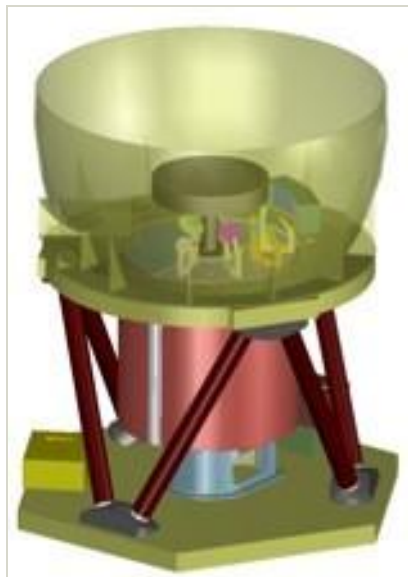


Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

Maryland

Images



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SIRICE instrument concept
(<https://techport.nasa.gov/image/4097>)

Project Website:

<http://sciences.gsfc.nasa.gov/sed/>

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

Matthew J McGill

Principal Investigator:

David O Starr

Co-Investigators:

Aaron Bansemer
James R Wang
Lihua Li
Gerald M Heymsfield
Lin Tian

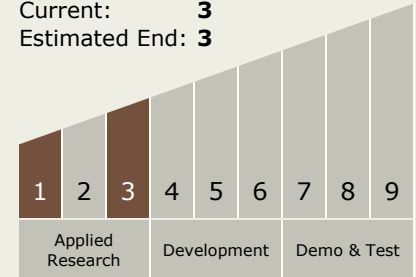
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Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves